

# ***COMPUTER SCIENCE CURRICULUM FRAMEWORK***



This document was prepared by:

Office of Career, Technical, and Adult Education  
Nevada Department of Education  
755 N. Roop Street, Suite 201  
Carson City, NV 89701

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## INTRODUCTION

The Nevada CTE Curriculum Frameworks are a resource for Nevada's public and charter schools to design, implement, and assess their CTE programs and curriculum. The content standards identified in this document are listed as a model for the development of local district programs and curriculum. They represent rigorous and relevant expectations for student performance, knowledge, and skill attainment which have been validated by industry representatives.

The intent of this document is to provide a resource to districts as they develop and implement CTE programs and curricula.

This program ensures the following thresholds are met:

- The CTE course and course sequence teaches the knowledge and skills required by industry through applied learning methodology and, where appropriate, work-based learning experiences that prepare students for careers in high-wage, high-skill and/or high-demand fields. Regional and state economic development priorities shall play an important role in determining program approval. Some courses also provide instruction focused on personal development.
- The CTE course and course sequence includes leadership and employability skills as an integral part of the curriculum.
- The CTE course and course sequence are part of a rigorous program of study and include sufficient technical challenge to meet state and/or industry-standards.

The CTE program components include the following items:

- Program of Study
- State Skill Standards
- Employability Skills for Career Readiness Standards
- Curriculum Frameworks
- Technical Assessment
- Certification of Program Completion

The Nevada CTE Curriculum Frameworks are organized utilizing the recommended course sequencing listed in the Program of Study and the CTE Course Catalog. The framework identifies the recommended content standards, performance standards, and performance indicators that should be taught in each course.

**NEVADA DEPARTMENT OF EDUCATION  
CURRICULUM FRAMEWORK FOR  
COMPUTER SCIENCE**

<b>PROGRAM TITLE:</b>	<b>COMPUTER SCIENCE</b>
<b>STATE SKILL STANDARDS:</b>	<b>COMPUTER SCIENCE</b>
<b>STANDARDS REFERENCE CODE:</b>	<b>CS</b>
<b>CAREER CLUSTER:</b>	<b>INFORMATION TECHNOLOGY</b>
<b>CAREER PATHWAY:</b>	<b>PROGRAMING &amp; SOFTWARE DEVELOPMENT</b>
<b>PROGRAM LENGTH:</b>	<b>3 LEVELS (L1, L2, L3C)</b>
<b>PROGRAM ASSESSMENT:</b>	<b>COMPUTER SCIENCE WORKPLACE READINESS SKILLS</b>
<b>CTSO:</b>	<b>FBLA / SKILLSUSA</b>
<b>GRADE LEVEL:</b>	<b>9-12</b>
<b>AVAILABLE INDUSTRY CERTIFICATIONS/LICENSES PROVIDERS:</b>	

**PROGRAM PURPOSE**

The purpose of this program is to prepare students for postsecondary education and employment in the Computer Science industry.

The program includes the following state standards:

- Nevada CTE Skill Standards: Computer Science
- Employability Skills for Career Readiness
- Common Core State Standards (alignment shown in the Nevada CTE Skill Standards)
- Nevada State Science Standards (alignment shown in the Nevada CTE Skill Standards)
- Common Career Technical Core (alignment shown in the Nevada CTE Skill Standards)

**CAREER CLUSTERS**

The National Career Clusters™ Framework provides a vital structure for organizing and delivering quality CTE programs through learning and comprehensive programs of study (POS). In total, there are 16 Career Clusters in the National Career Clusters™ Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career. As an organizing tool for curriculum design and instruction, Career Clusters™ provide the essential knowledge and skills for the 16 Career Clusters™ and their Career Pathways.\*

\*Cite: National Association of State Directors of Career Technical Education Consortium. (2012). Retrieved from <http://www.careertech.org/career-clusters/glance/careerclusters.html>

**PROGRAM OF STUDY**

The program of study illustrates the sequence of academic and career and technical education coursework that is necessary for the student to successfully transition into postsecondary educational opportunities and employment in their chosen career path.

**CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSO)**

To further the development of leadership and technical skills, students must have opportunities to participate in one or more of the Career and Technical Student Organizations (CTSOs). CTSOs develop character, citizenship, and the technical, leadership and teamwork skills essential for the workforce and their further education. Their activities are considered a part of the instructional day when they are directly related to the competencies and objectives in the course. (per NAC 389.800 section 3a)

**PROGRAM STRUCTURE**

The core course sequencing provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. Complete program sequences are essential for the successful delivery of all state standards in each program area.

<b>COMPUTER SCIENCE</b> <b>Core Course Sequence</b>	
<b>COURSE NAME</b>	<b>LEVEL</b>
Computer Science I	L1
Computer Science II	L2
Computer Science III or AP Computer Science A	L3C

The core course sequencing with the complementary courses provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. A program does not have to utilize all of the complementary courses in order for their students to complete their program of study. Complete program sequences are essential for the successful delivery of all state standards in each program area.

<b>COMPUTER SCIENCE</b> <b>Core Course Sequence with Complementary Courses</b>	
<b>COURSE NAME</b>	<b>LEVEL</b>
Computer Science I	L1
Computer Science II	L2
Computer Science II LAB*	L2L
Computer Science III or AP Computer Science A	L3C
Computer Science III LAB*	L3L
Computer Science Advanced Studies*	AS

\*Complementary Courses

**EMPLOYABILITY SKILLS FOR CAREER READINESS**

Employability skills, often referred to as “soft skills”, have for many years been a recognizable component of the standards and curriculum in career and technical education programs. The twenty-one standards are organized into three areas: (1) Personal Qualities and People Skills; (2) Professional Knowledge and Skills; and (3) Technology Knowledge and Skills. The standards are designed to ensure students graduate high school properly prepared with skills employers prioritize as the most important. Instruction on all twenty-one standards should be part of each course of the CTE program. Students are expected to demonstrate proficiency in the Employability Skills for Career Readiness upon completion of a CTE course sequence.

(per NAC 389.800 section 1)

**CTE / ACADEMIC CREDIT**

Career and technical education courses meet the credit requirements for high school graduation (1 unit of arts and humanities or career and technical education). Some career and technical education courses meet academic credit for high school graduation. Please refer to the local high schools course catalog or contact the local high school counselor for more information. (per NAC 389.672)

**TECHNICAL ASSESSMENT**

An end-of-program technical assessment has been developed to align with the Nevada CTE Skill Standards for this program. This assessment provides a measurement of student technical skill attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified by the letter “C”. (Level = L3C) (per NAC 389.800 section 1)

**ARTICULATION**

An articulation agreement is an officially approved agreement that matches coursework between the secondary and postsecondary institutions. These agreements are designed to help students make a smooth transition from secondary to postsecondary institutions. The articulation agreement identifies the specific courses that align and are accepted for credit at the postsecondary level.

Each local high school and college maintains their agreements. Please refer to the local high schools course catalog or contact the local high school counselor for more information.

**CERTIFICATION OF PROGRAM COMPLETION**

A student must be given a certificate upon completion of a course of study in an occupation which states the level of performance the pupil has attained in specific skills identified by representatives of business or industry. (per NAC 389.800 section 3b)

**CTE GRADUATION ENDORSEMENT**

A student qualifies for a CTE endorsement on their high school diploma after successfully completing the CTE program of study and meeting all academic requirements governing receipt of a standard diploma. (per NAC 389.815)

**CORE COURSE:**  
**RECOMMENDED STUDENT PERFORMANCE STANDARDS**

<b>COURSE TITLE:</b>	<b>Computer Science I</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI I</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L1</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>None</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>

**COURSE DESCRIPTION**

This course is designed to introduce students to programming and the role of the computer in society. The areas of major emphasis in the course will be on object-oriented programming methodology, algorithms, data structures and ethics. Topics will include program design, program implementation, standard data structures, and standard algorithms.

**TECHNICAL STANDARDS****CONTENT STANDARD 1.0 : UNDERSTAND THE RELATIONSHIP BETWEEN HARDWARE AND SOFTWARE**

Performance Standard 1.1 : Demonstrate Knowledge of the Relationship Between Hardware and Software

*Performance Indicators :* 1.1.1-1.1.5

**CONTENT STANDARD 2.0 : UNDERSTAND CONCEPTS OF PROBLEM SOLVING AND ALGORITHM DEVELOPMENT**

Performance Standard 2.1 : Understand a Problem Description

*Performance Indicators :* 2.1.1-2.1.3

Performance Standard 2.2 : Develop an Algorithm

*Performance Indicators :* 2.2.1-2.2.4

Performance Standard 2.3 : Test Algorithms

*Performance Indicators :* 2.3.1-2.3.3

**CONTENT STANDARD 3.0 : UNDERSTAND PROGRAMMING LANGUAGE CONCEPTS**

Performance Standard 3.1 : Utilize Programming Constructs

*Performance Indicators :* 3.1.1-3.1.7

Performance Standard 3.2 : Practice Procedural Programming

*Performance Indicators :* 3.2.1-3.2.4

**CONTENT STANDARD 4.0 : DEVELOP PROGRAMS**

Performance Standard 4.1 : Use Proper Implementation Strategies

*Performance Indicators :* 4.1.1

Performance Standard 4.2 : Test and Debug Programs

*Performance Indicators :* 4.2.1-4.2.3

**CONTENT STANDARD 5.0 : CULTIVATE GOOD PROGRAMMING STYLE**

Performance Standard 5.1 : Employ Coding Standards

*Performance Indicators :* 5.1.1-5.1.7

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Performance Standard 5.2 : Demonstrate Good Documentation Skills

*Performance Indicators* : 5.2.1-5.2.2

**CONTENT STANDARD 6.0 : UNDERSTAND STANDARD DATA STRUCTURES**

Performance Standard 6.1 : Utilize Simple Data Types

*Performance Indicators* : 6.1.1-6.1.3

Performance Standard 6.2 : Demonstrate Knowledge of Arrays

*Performance Indicators* : 6.2.1-6.2.3

**CONTENT STANDARD 7.0 : DEMONSTRATE KNOWLEDGE OF COMPUTING IN SOCIETAL CONTEXT**

Performance Standard 7.2 : Examine Ethical and Legal Issues

*Performance Indicators* : 7.2.1-7.2.2

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**

**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators* : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators* : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators* : 1.3.1-1.3.4

**ALIGNMENT TO COMMON CORE AND STATE SCIENCE STANDARDS\***

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices  
Algebra-Creating Equations  
Algebra-Seeing Structure in Expressions  
Algebra-Reasoning with Equations and Inequalities  
Functions-Interpreting Functions  
Number & Quantity-Quantities  
Number & Quantity-The Real Number System

\* Refer to the Computer Science Standards for alignment by performance indicator

**CORE COURSE:  
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

<b>COURSE TITLE:</b>	<b>Computer Science II</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI II</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L2</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Computer Science I</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>

**COURSE DESCRIPTION**

This course is a continuation of Computer Science I. This course provides intermediate computer science students with instruction in advanced techniques and processes. The areas of major emphasis in the course will be on object-oriented programming methodology, algorithms, data structures and ethics. Topics will include program design, program implementation, standard data structures, and standard algorithms. The appropriate use of technology and industry-standard equipment is an integral part of this course.

**TECHNICAL STANDARDS**

**CONTENT STANDARD 2.0 : UNDERSTAND CONCEPTS OF PROBLEM SOLVING AND ALGORITHM DEVELOPMENT**

Performance Standard 2.3 : Test Algorithms

*Performance Indicators :* 2.3.1-2.3.3

**CONTENT STANDARD 3.0 : UNDERSTAND PROGRAMMING LANGUAGE CONCEPTS**

Performance Standard 3.1 : Utilize Programming Constructs

*Performance Indicators :* 3.1.8-3.1.11

Performance Standard 3.3 : Practice Object–Oriented Programming (OOP)

*Performance Indicators :* 3.3.1-3.3.3

**CONTENT STANDARD 4.0 : DEVELOP PROGRAMS**

Performance Standard 4.1 : Use Proper Implementation Strategies

*Performance Indicators :* 4.1.1-4.1.3

Performance Standard 4.2 : Test and Debug Programs

*Performance Indicators :* 4.2.2-4.2.5

Performance Standard 4.3 : Analyze Algorithms

*Performance Indicators :* 4.3.1-4.3.2

**CONTENT STANDARD 5.0 : CULTIVATE GOOD PROGRAMMING STYLE**

Performance Standard 5.2 : Demonstrate Good Documentation Skills

*Performance Indicators :* 5.2.3

**CONTENT STANDARD 6.0 : UNDERSTAND STANDARD DATA STRUCTURES**

Performance Standard 6.2 : Demonstrate Knowledge of Arrays

*Performance Indicators :* 6.2.2-6.2.4

Performance Standard 6.3 : Demonstrate Knowledge of Classes

*Performance Indicators :* 6.3.1-6.3.6

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**CONTENT STANDARD 7.0 : DEMONSTRATE KNOWLEDGE OF COMPUTING IN SOCIETAL CONTEXT**

Performance Standard 7.1 : Recognize the System Reliability Issues

*Performance Indicators :* 7.1.1-7.1.2

Performance Standard 7.2 : Examine Ethical and Legal Issues

*Performance Indicators :* 7.2.3

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS****CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators :* 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators :* 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators :* 1.3.1-1.3.4

**ALIGNMENT TO COMMON CORE AND STATE SCIENCE STANDARDS\***

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects

Writing Standards for Literacy in Science and Technical Subjects

Speaking and Listening

**Mathematics:** Mathematical Practices

Algebra-Creating Equations

Algebra-Reasoning with Equations and Inequalities

\* Refer to the Computer Science Standards for alignment by performance indicator

**CORE COURSE:  
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Students enrolled in this sequence have the option of Computer Science III or AP Computer Science A for the L3C class that is the prerequisite for the Computer Science program.

**OPTION A**

<b>COURSE TITLE:</b>	<b>Computer Science III</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI III</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L3C</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Computer Science II</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>
<b><u>COURSE DESCRIPTION</u></b> <p>This course is a continuation of Computer Science II. This course provides advanced computer science students with instruction in advanced programming, techniques and processes. The students will continue to develop all skills learned in Computer Science I and II. The appropriate use of technology and industry-standard equipment is an integral part of this course. Upon successful completion of this course, students will have acquired entry-level skills for employment in this field or entry into a college level Computer Science course of study.</p>	

**TECHNICAL STANDARDS**

**CONTENT STANDARD 3.0 : UNDERSTAND PROGRAMMING LANGUAGE CONCEPTS**

Performance Standard 3.1 : Utilize Programming Constructs

*Performance Indicators :* 3.1.11

Performance Standard 3.3 : Practice Object–Oriented Programming (OOP)

*Performance Indicators :* 3.3.4-3.3.6

**CONTENT STANDARD 4.0 : DEVELOP PROGRAMS**

Performance Standard 4.1 : Use Proper Implementation Strategies

*Performance Indicators :* 4.1.4

Performance Standard 4.2 : Test and Debug Programs

*Performance Indicators :* 4.2.5

Performance Standard 4.3 : Analyze Algorithms

*Performance Indicators :* 4.3.1-4.3.2

**CONTENT STANDARD 5.0 : CULTIVATE GOOD PROGRAMMING STYLE**

Performance Standard 5.2 : Demonstrate Good Documentation Skills

*Performance Indicators :* 5.2.4

**CONTENT STANDARD 6.0 : UNDERSTAND STANDARD DATA STRUCTURES**

Performance Standard 6.2 : Demonstrate Knowledge of Arrays

*Performance Indicators :* 6.2.4-6.2.5

Performance Standard 6.3 : Demonstrate Knowledge of Classes

*Performance Indicators :* 6.3.5-6.3.6

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Performance Standard 6.4 : Demonstrate Knowledge of Lists

*Performance Indicators* : 6.4.1-6.4.9

**CONTENT STANDARD 7.0 : DEMONSTRATE KNOWLEDGE OF COMPUTING IN SOCIETAL CONTEXT**

Performance Standard 7.1 : Recognize the System Reliability Issues

*Performance Indicators* : 7.1.2

Performance Standard 7.2 : Examine Ethical and Legal Issues

*Performance Indicators* : 7.2.4-7.2.5

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**

**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators* : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators* : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators* : 1.3.1-1.3.4

**ALIGNMENT TO COMMON CORE AND STATE SCIENCE STANDARDS\***

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices

\* Refer to the Computer Science Standards for alignment by performance indicator

**CORE COURSE:**  
**RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Students enrolled in this sequence have the option of Computer Science III or AP Computer Science A for the L3C class that is the prerequisite for the Computer Science program.

**OPTION B**

<b>COURSE TITLE:</b>	<b>AP Computer Science A</b>
<b>ABBR. NAME:</b>	<b>AP COMPUTER SCI A</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L3C</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Computer Science II</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>

**COURSE DESCRIPTION**

This course is a continuation of Computer Science II. This course follows Advanced Placement curriculum and prepare students for the AP Computer Science exam. The course provides advanced computer science students with instruction in advanced programming, techniques and processes. The students will continue to develop all skills learned in Computer Science I and II. The appropriate use of technology and industry-standard equipment is an integral part of this course. Upon successful completion of this course, students will have acquired entry-level skills for employment in this field or entry into a college level Computer Science course of study.

**TECHNICAL STANDARDS**

**CONTENT STANDARD 3.0 : UNDERSTAND PROGRAMMING LANGUAGE CONCEPTS**

Performance Standard 3.1 : Utilize Programming Constructs

*Performance Indicators :* 3.1.11

Performance Standard 3.3 : Practice Object–Oriented Programming (OOP)

*Performance Indicators :* 3.3.4-3.3.6

**CONTENT STANDARD 4.0 : DEVELOP PROGRAMS**

Performance Standard 4.1 : Use Proper Implementation Strategies

*Performance Indicators :* 4.1.4

Performance Standard 4.2 : Test and Debug Programs

*Performance Indicators :* 4.2.5

Performance Standard 4.3 : Analyze Algorithms

*Performance Indicators :* 4.3.1-4.3.2

**CONTENT STANDARD 5.0 : CULTIVATE GOOD PROGRAMMING STYLE**

Performance Standard 5.2 : Demonstrate Good Documentation Skills

*Performance Indicators :* 5.2.4

**CONTENT STANDARD 6.0 : UNDERSTAND STANDARD DATA STRUCTURES**

Performance Standard 6.2 : Demonstrate Knowledge of Arrays

*Performance Indicators :* 6.2.4-6.2.5

Performance Standard 6.3 : Demonstrate Knowledge of Classes

*Performance Indicators :* 6.3.5-6.3.6

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Performance Standard 6.4 : Demonstrate Knowledge of Lists

*Performance Indicators :* 6.4.1-6.4.9

**CONTENT STANDARD 7.0 : DEMONSTRATE KNOWLEDGE OF COMPUTING IN SOCIETAL CONTEXT**

Performance Standard 7.1 : Recognize the System Reliability Issues

*Performance Indicators :* 7.1.2

Performance Standard 7.2 : Examine Ethical and Legal Issues

*Performance Indicators :* 7.2.4-7.2.5

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**

**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

*Performance Indicators :* 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

*Performance Indicators :* 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

*Performance Indicators :* 1.3.1-1.3.4

**ALIGNMENT TO COMMON CORE AND STATE SCIENCE STANDARDS\***

**English Language Arts:** Reading Standards for Literacy in Science and Technical Subjects  
Writing Standards for Literacy in Science and Technical Subjects  
Speaking and Listening

**Mathematics:** Mathematical Practices

\* Refer to the Computer Science Standards for alignment by performance indicator

**COMPLEMENTARY COURSE(S):**

Programs that utilize the complementary courses can include the following courses. The Advanced Studies course allows for additional study through investigation and in-depth research.

<b>COURSE TITLE:</b>	<b>Computer Science Advanced Studies</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI AS</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>AS</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Computer Science III</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>

**COURSE DESCRIPTION**

This course is offered to students who have achieved all content standards in a program whose desire is to pursue advanced study through investigation and in-depth research. Students are expected to work independently or in a team and consult with their supervising teacher for guidance. The supervising teacher will give directions, monitor, and evaluate the students' topic of study. Coursework may include various work-based learning experiences such as internships and job shadowing, involvement in a school-based enterprise, completion of a capstone project, and/or portfolio development. This course may be repeated for additional instruction and credit.

**TECHNICAL STANDARDS**

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

**EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

**SAMPLE TOPICS**

- Teaching Assistant
- Capstone project
- CTSO leadership
- Internship

**COMPLEMENTARY COURSE(S):**  
**RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Programs that utilize the complementary courses can include the following courses. The lab courses allow additional time to be utilized in developing the processes, concepts, and principles as described in the classroom instruction. The standards and performance indicators for each lab course are shown in the corresponding course listed in the previous section.

<b>COURSE TITLE:</b>	<b>Computer Science II LAB</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI II L</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L2L</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Concurrent enrollment in Computer Science II</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>
<b><u>COURSE DESCRIPTION</u></b> This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth lab experience that applies the processes, concepts, and principles as described in the classroom instruction. The coursework will encourage students to explore and develop advanced skills in their program area. The appropriate use of technology and industry-standard equipment is an integral part of this course.	

<b>COURSE TITLE:</b>	<b>Computer Science III LAB</b>
<b>ABBR. NAME:</b>	<b>COMPUTER SCI III L</b>
<b>CREDITS:</b>	<b>1</b>
<b>LEVEL:</b>	<b>L3L</b>
<b>CIP CODE:</b>	<b>11.0701</b>
<b>PREREQUISITE:</b>	<b>Concurrent enrollment in Computer Science III</b>
<b>CTSO:</b>	<b>FBLA / SkillsUSA</b>
<b><u>COURSE DESCRIPTION</u></b> This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth lab experience that applies the processes, concepts, and principles as described in the classroom instruction. The coursework will encourage students to explore and develop advanced skills in their program area. The appropriate use of technology and industry-standard equipment is an integral part of this course.	